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IS 13388-2 (1992): Performance Requirements and Methods of Tests of TV Ferrite Components, Part 2: U Core for Line Driver Transformers [LITD 5: Semiconductor and Other Electronic Components and Devices]

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भाग 2 लाइन ड्राइवर ट्रांसफार्मरों के लिए 'U' कोर

Indian Standard

PERFORMANCE REQUIREMENTS AND METHODS OF TESTS OF TV FERRITE COMPONENTS

PART 2 U CORE FOR LINE DRIVER TRANSFORMERS

UDC 621·318·124·0·42·1·621·397·332·11 : 621·314·228

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1992 Price Group 2

Magnetic Components and Ferrite Material Sectional Committee, LTD 13

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Magnetic Components and Ferrite Materials Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

The object of this standard is to specify the performance requirements and methods of test of U core used in assembly of line driver transformer which is a critical component of B and W television receivers.

This Standard (Part 2) is a part of the series of Indian Standards on Performance requirements and methods of tests of TV ferrite components. The other parts of the series are as follows:

Part 1 U core for line output transformer, and
Part 3 Core for deflection coil.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PERFORMANCE REQUIREMENTS AND METHODS OF TESTS OF TV FERRITE COMPONENTS

PART 2 U CORE FOR LINE DRIVER TRANSFORMERS

1 SCOPE

1.1 This Standard (Part 2) covers performance requirements and methods of tests of U core for line driver transformers.

2 REFERENCES

2.1 The Indian Standards given below are necessary adjuncts to this standard:

IS No.	*Title*
2 : 1960	Rules for rounding off numerical values (*revised*)
7416 (Part 12) : 1984	Dimensions of TV ferrite components: Part 12 U core for line driver transformer
7687 : 1980	Methods of measurement for cores for inductors and transformers for telecommunications (*first revision*)

3 REQUIREMENTS

3.1 Material and Electrical Characteristics

3.1.1 The material and electrical characteristics at 25±1°C are specified in Table 1.

3.2 Dimensions

3.2.1 The dimensions shall be according to IS 7416 (Part 12) : 1984.

4 METHODS AND CONDITIONS OF TESTS

4.1 The methods and conditions of tests shall be according to IS 7687 : 1980 wherever applicable.

5 MEASUREMENT OF EFFECTIVE PERMEABILITY

5.1 The instrument used, method and conditions of tests for measurement of effective permeability are given below:

Instrument used	LCR bridge
Accuracy	±0·1 percent
Measuring frequency	10 kHz *Max*
Flux density	0·1 mT *Max*
Testing coil	50 turns (N) with 0·3 mm diameter wire

μeff is calculated from formula

$L = \mu\text{eff}\ \mu\text{o}\ N \times A/C$ [in MKS]

where 'L' (inductance) is known;

1/A is core factor and

$\mu\text{o} = 4 \times 10$

6 POWER LOSS MEASUREMENT

6.0 The power loss shall be measured by either Substitution Method or Dissipation Method.

6.1 Substitution Method

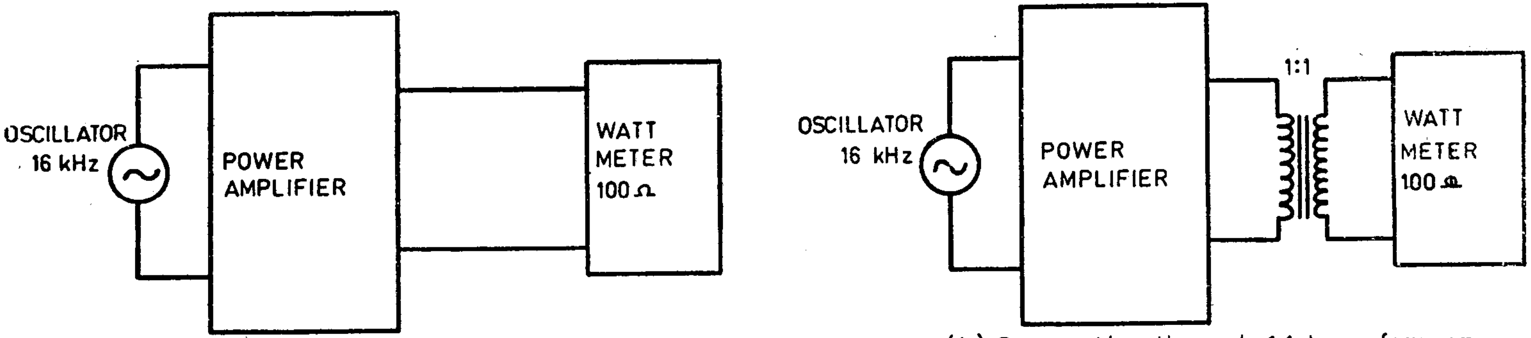
6.1.1 Wattmeters, oscillator and power amplifier are the equipments used for the measurement of power loss.

The reference diagram for the measurement of power loss measurement is shown in Fig. 1.

Table 1 Material and Electrical Characteristics

(*Clause* 3.1.1)

Sl No. (1)	Characteristics (2)	Requirements (3)
i)	Initial permeability (μi)	2 300 ±25 percent
ii)	Relative dissipation factor (tan/μi), *max*	
	a) at 10 kHz	3·0
	b) at 100 kHz	10·00
iii)	Curie Temperature (Tc), °C, *Min*	130°C
iv)	Flux density (bs) at H+3 000 A/M, mT	$3\ 800 \times 10^3$
v)	DC Resistivity (P), ohm −m, *Min*	0·3
vi)	Hysteresis material constant (nB) (at f=10 kHz, B=1·5 mT and 3·0 mT), *Max*	2·0
vii)	Relative temperature coefficient (°F) (0= +25°C to +70°C), *Max*	$4{\cdot}0 \times 10^{-6}$
viii)	Effective Permeability	1 940±20%
ix)	Power loss at 16 kHz, 200 mT and 25°C, *Max*	0·48 w/set



(a) Direct Connection

(b) Connection through 1:1 transformer

FIG. 1 POWER LOSS BY SUBSTITUTION METHOD

6.1.2 The input voltage shall be such as to cause a power loss of 3.6 W in a load of 100 ohm and shall create a flux density of 200 mt at 16 kHz with 24 turns (N) on the core under test.

6.1.3 The difference between the power dissipated in the load connected directly and through 1 : 1 transformer is taken as an approximate measure to power loss in a core.

6.2 Dissipation Method

6.2.1 The test coil is designed so that the resonance taking place at test frequency off 16 kHz and the power level of the oscillator is sufficient to create a test flux density of 200 mT across the coil.

The reference diagram for the measurement of power loss by dissipation method is shown in Fig. 2.

6.1.2.1 At resonance, power loss

=Power dissipated in the core
=V×I

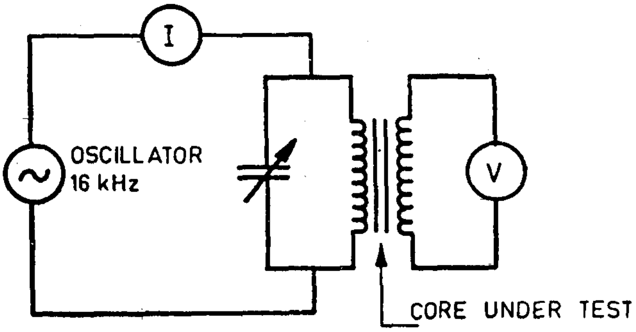


FIG. 2 POWER LOSS BY DISSIPATION METHOD

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